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ABSTRACT

Rather than examining stress at the level of individuals, as is usually done, this study looked at stress at the institutional level or from an "administrative perspective." The purpose was to measure changes in levels of stress in schools over the academic year. Schools sampled included three public high schools in Salinas, California. The majority in two of the schools was white and in the third school the majority was Hispanic. Daily measures of stress were collected from routine administrative records, such as student contacts with school and community services or staff. Stress indicators included several categories: dietary (cafeteria customer counts), medical, academic, facilities use, and behavioral. Findings indicated that patterns of stress in schools are highly variable over the course of the academic year; are systematic, not random, in school environments; and may vary in predictable ways between schools. There were differences in the patterns between the white schools and the Hispanic school. More should be done to investigate time-ordered patterns of stress in educational settings and to control for this source of variation in planning, evaluation, and research. (Author/JM)

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Stress in School Environments:

An Administrative Perspective

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This paper will be presented at the American Educational Research Association Conference, March, 1982 - Division A.

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Stress in School Environments:

An Administrative Perspective

Introduction

Theories of social-psychological processes in educational administration deal with person-environment interactions at the whole institution level. These theories have the potential for integrating research in other areas of education by offering conceptualizations of social-psychological variables outside of the classroom and the counselor's office. In this sense, social-psychological theories of administration could be useful in research on student diversity, aptitude-treatment interactions, curriculum evaluation and so on by better describing processes in the larger environment - often cited in these studies as "external influences" or "confounding variables". Unfortunately, administrative theory building is considered by most to be within a separate domain from other areas of educational research and this integrating potential is never realized.

One area in which administrative theory building could help integrate non-administrative research is in the area of human stress. Stress research typically focuses on the identification and control of physiological manifestations, is experimental and psychological in nature, involves self-reports and behavioral measures such as Galvanic Skin Response, respiration levels and heart rate (McGuin, et al, 1981). Consequently, little is known about stress at the aggregate level: how

it manifests itself in staff and students as groups, how it may be diffused through a population, how aggregate levels of stress may vary over time. The administrative concommitant of human stress is institutional "press" (Murray, 1938). The study of institutional press, or the study of stress from an administrative perspective, could provide a framework for answering questions such as these.

The purpose of this study was to look at changes in levels of stress over the academic year. It was based on the idea that stress plays an intervening role in the effects of schools on students. School environments interact with student characteristics to produce stress. Stress, in turn, causes students to adapt to the environment and, as a result, cognitive and/or behavioral changes take place.

Stress--as an intervening variable in the effect of educational institutions on students--is the central idea found in adaptive models of psychological stress and adaptive models of educational impact. Despite the fact that this study is at the aggregate level, definitions of stress and adaptive processes found in individual level models are important to understand before aggregate level models of change in stress over time can be proposed.

Stress Literature

A vast literature exists on the topic of stress, the most basic work being done on the brain and its role in mediating psychological and physiological stress reactions. Selye's Stress in Health and Disease cites 7518 references on stress (Selye, 1976a) and because of the enormity of

the area, only adaptive models will be described here.

Adaptive models of psychological stress (also referred to as homeostatic models) suggest that individual perceptions of environmental stimuli create a disturbance in the steady state of the psychological system, which in turn activate coping or adaptive mechanisms intended to return equilibrium to the psychological system (Lazarus, 1966). Stress is defined here as a "disturbance" or disruption in the "steady state" or equilibrium, balance or resting condition. Stress can also be defined as a condition which triggers the system's mechanisms of control, coping or adaptation. Thus stress is a condition of the person which comes about because of perceptions of things in the environment and which triggers other adaptive behaviors or cognitions.

Three adaptive models of stress often cited are prototypical: Selye's adaptation syndrome, Antonovsky's stress management model and Hamilton and Warburton's information processing model. Selye first distinguished between environmental "stressors" and individual "stress reactions" (Selye, 1954, 1963, 1979). Antonovsky applied Selye's person-environment perspective to a "stress management" model, focusing on behavior changes (Antonovsky, 1979). Hamilton and Warburton emphasized the cognitive processes through which environmental stimuli result in adaptations (Hamilton and Warburton, 1980). In all three models, stress is defined as a link in a person-environment interaction which results in some behavior or cognitive change.

Adaptive Models of Educational Impact

Like adaptive models of psychological stress, adaptive models of educational impact describe a process in which individuals perceive environmental stimuli (academic programs, physical facilities, exams, teachers, etc.). These perceptions create a need to accommodate to the environment by adopting new behaviors or cognitions or adapting old behaviors or cognitions. Figure 1 illustrates the adaptive process.

This "need to accommodate" is analogous to "disturbance" in the psychological definition of stress. Piaget describes this need, disturbance or stress as "disequilibrium" and the result of accommodation to the environment as "equilibrium"--balance or the steady state (Piaget, 1953).

Insert Figure 1 about here

Examples of adaptive models of educational impact are those which grew out of the work of Murray (1939), who first described "environmental press", the external counterpart of student "need". Murray described need as the result of students' perceptions of the world around them (analogous to the concept of psychological stress). Stern's "student ecology" model spun off of Murray's ideas and several instruments were developed, intended to identify perceptual dimensions used by students to describe stimuli which trigger their adaptations: The College and University Environment Scale (Pace, 1969), The Institutional Functions Inventory (Peterson, 1970), The Learning Environment Inventory

(Anderson and Walberg, 1974), The Organizational Climate Index (Stern, 1970), The Classroom Environment Scale and The University Residence Environment Scale (Moos, 1979). These instruments were usually administered at one point in time and were used to define perceptual dimensions used by students to describe educational environments (e.g., degree of structure in the organization). Thus, adaptive models of educational impact are similar to adaptive models of psychological stress and are, in large part, applications of these models to educational settings.

Problems With These Models

Several problems are cited in the literatures of psychological stress and educational impact. First is the problem of specifying the steady state condition to which the psychological system returns after being disturbed. What is equilibrium, balance or the resting state? What behavioral or cognitive changes are presumed to result from student exposure to educational environments? Second is the inability of researchers to agree to the mechanisms of the adaptive stress phenomena. The connections between environmental stimuli and behavioral/cognitive responses are clear, but how perception, physiological and psychological stress reactions mediate this process is not clear. Third is the inability of researchers to agree to a terminology of stress research (as witnessed by the mass of research in the field). Fourth are problems related to measuring stress. What are the most valid and reliable means of measuring stress: self-reports, expressive acts, instrumental acts or physiological measures?

Changes in Stress Over Time

Another problem, not often cited in the literature and the focus of this research, is a lack of definition of stress as it changes over time. It is possible that levels of stress vary over time in ways unique to environments which stimulate stress (e.g., educational institutions). This idea is supported by laws governing biological systems on which adaptive models of stress are grounded. These laws define stress as a condition which triggers a self-preserving mechanism of system control involving a flow of information among parts of the system and selection of appropriate responses (Smith, 1972). These laws also hold that periodicity--cycles in system maintenance--are determined by some external cue which sets the system clock. This cue is always a stressor, but not all stressors cue the system clock. In a school, the "cue" might be the start of the academic year.

As stated earlier, it is known that stress has a curvilinear relationship with task performance (Yerkes-Dotson, in Hamilton & Warburton, 1980) and that too much or too little stress results in poor performance. If it can be shown that educational environments do not have a uniform effect over time or that stress, as a mediator in the effect of schools, changes over time then it would seem useful to identify patterns of stress over time as a means of predicting high and low performance. At least, identification of such a pattern of change in stress over time would help administrators and teachers plan programs and instruction, aid in the evaluation of staff and in the research of educational impact. For example, if a stress reduction program is pretested at a high stress

time of the year and post-tested at a low stress time, then program effectiveness might be concluded when, in reality, stress reduction was an artifact of a changing environment and not the program. And if stress reduction programs are applied indiscriminantly during the course of the school year, they may actually reduce staff and student performance by reducing moderate levels of stress or waste resources by attempting to reduce stress levels which are already at a low point.

Earlier Research

Several studies have attempted to model changes in stress over the academic year in college settings using archival records of stress-related behaviors (Baker, 1963; Baker & Nidorf, 1964; Downey, Robyak & Astley, 1979; Downey, Robyak, Sherrard & Astley, 1979; Reeves, Heikkinen, Karshner & Kraweicki, 1981). All of these studies reported finding a general pattern of change in stress levels consisting of (a) first semester being more stressful than second semester, (b) a general decline in stress over the course of each semester, and (c) distinct peaks in stress in October and March or April.

The Baker and Baker and Nidorf studies used weekly student contacts with a mental health clinic over a six year period at Clark University to derive the model which was stable over the entire six years. The Downey et al. studies used similar archival records for four mental health services over a two year period at Kansas State University and replicated the patterns on five of the Big Eight campuses (Iowa State, University of Colorado, University of Missouri and University of Oklahoma). Reeves et al.

further replicated the pattern over a two year period at the University of Wisconsin-Madison using a larger empirical base and similar types of indicators. They also compared the pattern to non-campus community stress patterns and found no correlation, suggesting the pattern was unique to educational settings.

Methods

This was a descriptive study of change in stress in schools over time and did not attempt to identify variables which cause stress or to use stress as a predictor. Rather, an attempt was made to describe the changing nature of stress in schools, both theoretically and empirically, so it might be accounted for in future multivariate analyses. Archival indicators of student stress reactions were collected from a selection of schools and examined for the hypothesized pattern using a univariate time series analysis.

Population and Schools

The schools sampled included three public high schools in Salinas, California, a community of over 75,000 people located 325 miles north of Los Angeles, 106 miles south of San Francisco and 17 miles inland from Monterey Bay. Salinas has both urban and agricultural characteristics and its population is ethnically mixed: 61 percent White, 27 percent with Spanish surnames, 4 percent Filipino, 2 percent Black and 6 percent Other groups.

The three high schools ranged from 1,652 to 2,036 students. The majority in two of the schools were White (68.2% in Salinas High and

55.3% in North Salinas High) and in the third school the majority were Hispanic (67.4% in Alisal High). Students from the predominantly White schools came from families with average to above average socio-economic status and from average to below average in the predominantly Hispanic school. The basic curriculum and school operations were similar in all three schools with greater emphasis on college preparatory in Salinas (predominantly White) and more technical/vocational emphasis at Alisal High (predominantly Hispanic). Alisal had the smallest student body but the most diffuse physical plant. North Salinas had the largest student body and the largest physical plant. Salinas had the second-largest student body but the smallest and most compact physical plant.

Instrumentation and Sampling

This study relied on archival data to indicate stress in school environments. Daily measures of stress were collected from each of the schools in the form of routine administrative records. These records contained frequencies of various student contacts with school and community services or staff and were compiled from staff logs, sign-in sheets, teacher referrals and written requests for conferences by students. These data were collected for the period beginning September 2, 1980 and ending May, 1981 for a total of 171 days. The samples did not include holidays, Saturdays, Sundays or teacher training days.

Records were initially arranged in categories, some of which were similar to those found in physiological measures but were defined only for interpretation at the sociological level. Categories included: (a) dietary,

(b) medical, (c) academic, (d) facilities use and (e) behavioral. Comparable school records were collected within each category for each school with only minor differences in the manner of record keeping and availability of records. A total of 35 different indicators were obtained with 10 to 13 for each school and two off-campus indicators. In all cases, the raw data included daily frequency of some student behavior sampled from the entire student body and the initial data matrix included 35 indicators X 171 points in time.

Design and Data Analysis

This study employed a repeated measures design using multiple indicators of the single construct--stress. The unit of analysis was "day" and correlations between indicators were based on an N of 171 days. The value assigned to each day was frequency of stress-related behaviors reflected in each indicator. Thus, these were aggregate level data and could not be used to show that individuals go through variations over time. However, it is likely that variation in aggregate level stress is related in some way to individual level stress and in future studies could be used as a predictor or control variable. This study did not formally link individual with aggregate level stress, but assumes that relationship exists.

The data were analyzed in three parts. First, a series of exploratory procedures were carried out to reduce the original 35 indicators to a more parsimonious arrangement before examining the data for change over time. These included studying the correlations between all indicators

and logical groupings of stress indicators followed by a factor analysis. Graphical presentation of factor solutions were examined, including means and standard deviations of monthly aggregates. These patterns were then tested for linear and non-linear trend using multiple regression techniques. Finally, statistical time series analyses were conducted on each factor to test for non-randomness of the patterns over time.

Results

The results of data reduction via factor analysis are shown in Table 1. Two factors were found in both Salinas and North Salinas; four in Alisal. Eigenvalues and percent variance explained by factor solutions were generally larger in Salinas and North Salinas than in Alisal. North Salinas Factor One (NS-1) accounted for the largest percent of variance (53.3%, eigenvalue = 4.26). Salinas Factor One (S-1) accounted for 44% of variance (eigenvalue = 4.84) with Factors Two in North Salinas (NS-1) and Salinas (S-2) accounting for 18.5 (e = 2.03) and 13.3 (e = 1.06), respectively. The total variances explained by these factors were greater than 60% in both schools. In Alisal, total variance accounted for was also greater than 60% but four factors were required, each explaining less than 20% and each with eigenvalues only slightly over 1.0.

Thus, the variance in the correlation matrices was largely explained by a single factor, except in Alisal, which indicates that the specific stress indicators are not measuring anything unique but are tapping into a larger construct. This is presumed to be "stress" as defined earlier. A general pattern of stress then, appears to be operating

in Salinas and North Salinas. This is not as clear in Alisal.

Insert Table 1 about here

The highest loading stress indicators on NS-1 were dietary (including federally subsidized and non-subsidized cafeteria customers), loading .90 and .82 and medical (including contacts with the school nurse), loading .85.

The highest loading indicators on S-1 were also dietary (cafeteria customer counts loading .94) and medical (contacts with school nurse loading .84). Behavioral indicators in the form of discipline reports (loading .88 and .70) and suspensions (loading .84) also weighed heavily on S-1.

The highest loadings on S-2 were behavioral indicators in the form of contacts with school counselors (loading 176, 175 and .68). Contacts with school counselors did not exist for North Salinas and Alisal. No indicators loaded over .44 on NS-2.

The highest loadings on factor solutions in Alisal (A-1, A-2, A-3, and A-4) were also dietary, medical and behavioral. Dietary indicators in the form of non-subsidized cafeteria customers loaded .54 on A-1. Medical indicators in the form of contacts with the school nurse loaded .41 on A-2. Dietary--federally subsidized cafeteria customers--loaded .48 on A-3. And behavioral, in the form of frequency of school dropouts, loaded .42 on A-4. No other indicators loaded above .41 on any Alisal

factor except non-subsidized cafeteria customers, which loaded -.54 on A-2.

Thus, dietary indicators, medical and behavioral as defined here, may be sufficient in the future to reflect stress patterns, as these data suggest.

Each of the factor solutions were then examined for polynomial trend to determine the extent to which the relationship between stress and time (i.e., days of the school year) was linear or non-linear. This analysis, together with visual inspection of each stress factor plotted over time gave some idea as to the form of the relationship of stress and time, as well as the overall variability of stress. Plots of stress patterns are shown in Figures 2 - 9 and results of the trend analysis are in Table 2.

Insert Table 2 about here

The analysis for polynomial trend consisted of adding second and third degree polynomials to the regression equation $Y = X$, where Y = stress as reflected in each factor solution and X = time measured in days. Thus, $Y = X + X^2$ and $Y = X + X^2 + X^3$ were each examined for amount of variance explained, incremental variance explained and significance of beta weights, using the F statistic.

As shown in Table 2, three of the stress patterns contained at least first, second and third order polynomials (S-1, S-2 and S-3). NS-1 contained a third order polynomial, NS-2 contained second and third order

polynomials, A-4 contained a second order polynomial and only A-3 indicated first degree only. Thus, the forms of the relationship between stress and time were highly variable and largely non-linear.

The final procedure involved a statistical time series analysis on each of the stress patterns to test for auto-correlation, or the relationship between the series of 171 observations and its lags. The procedure was used descriptively to examine the stochastic processes which may have produced the patterns of stress over time, to illustrate the non-random nature of the patterns and , in short, to determine whether or not the measure of stress on one day was related to the measure of stress on preceding days. The iterative process of identification, estimation and diagnosis was carried out on each stress pattern and the most significant estimates containing the fewest number of model parameters was obtained. T-ratios for all reported parameter estimates were significant at the .01 level.

First order autoregressive processes were found in three of the patterns: S-1, S-2 and NS-1 (ARIMA [1, 0, 0]). Thus, in S-1, S-2 and NS-1, observations of stress made at one point in time are highly correlated with observations made at the preceding point in time. Parameter estimates indicated the degree of relationship to be .96 (S-1), .64 (S-2) and .81 (NS-29).

First order moving averages processes were found operating in all four Alisal stress patterns (ARIMA [0, 1, 1]). Thus, in A-1, A-2 , A-3 and A-4, observations made at one point in time are not correlated with

observations made at the preceding point in time, but with the error associated with preceding measures. Parameter estimates were also high in Alisal: .70 (A-1), .82 (A-2), .62 (A-3), and .89 (A-4). A mixed model, ARIMA (1, 0, 1), was found in North Salinas Factor Two with auto-regressive parameter estimate .89 and moving averages parameter estimate .56. Thus, observations on one day were correlated with both prior days' measures and error in prior days' measures.

Thus, the results of the statistical time series analysis indicated some differences in stochastic processes existed between the three schools, but in none of the schools were the patterns of stress random over time.

To summarize, 35 indicators of stress were reduced to eight stress patterns via factor analysis: a primary pattern and secondary pattern in both Salinas and North Salinas, and four patterns in Alisal. The patterns were then analyzed for polynomial trend and found to be largely curvilinear over time. Finally, they were analyzed using a statistical time series analysis and found to not be random artifacts of the school environment, but series of measures of stress linked in some way to levels of stress on preceding days. Differences between schools were found in the nature of the autocorrelation, largely between Alisal and the other two schools studied.

Insert Figures 2 - 9 about here

Conclusions

These findings indicated that patterns of stress in schools (a) are highly variable over the course of the academic year (i.e., contain largely non-linear relationships with time), (b) are not random, but systematic in school environments (i.e., contain autocorrelation), and (c) may vary in predictable ways between schools.

Assuming the model of stress as an intervening variable in behavioral and cognitive change, we know that too much or too little stress will negatively influence task performance. If we know patterns of stress vary significantly over time in schools, as these results seem to show, then we must account for this source of variation in planning, evaluation and research done in school environments.

Furthermore, we must take into account apparent differences in stress patterns between culturally homogeneous schools and culturally diverse schools found in this study. All of the patterns contained auto-correlation but the patterns in the White schools reflected autoregressive processes while patterns in the largely Hispanic school reflected moving averages processes (except for one mixed model in North Salinas, which will be thought of as a sub-pattern in a predominantly white school). Thus, levels of stress--in the culturally mixed populations--on one day were not correlated with preceding days' levels, but the error associated with preceding days' levels.

One interpretation of this finding is that in schools with greater cultural mix, these types of records tap into something not clearly mediated by school structures and functions. In largely white schools,

stress may co-vary with opening of the school year, exam schedules, major social events, holidays and other school structures and functions. In culturally mixed schools, stress may co-vary to a lesser degree with school structures but still be reflected in archival records. These differences may be caused by (a) different sources of stress for non-whites than whites (e.g., yearly patterns tied to agricultural employment cycles, lower incomes and socio-economic status), (b) differences in perceptual style which some research says ultimately affects coping mechanisms in various cultural groups, and (c) social propinquity, or the idea that largely heterogeneous populations are less likely to develop strong social support groups.

Implications

These findings need to be replicated on a randomly selected set of institutions and linked to valid and reliable measures of individual level stress. Assuming this can be done, these results have implications for research, program evaluation and educational planning.

Research on student diversity, aptitude-treatment interactions and other largely quasi-experimental data drawn cross-sectionally from schools, often attempt to control for general variation over time by including multiple observations at some selected interval. Unfortunately, the number of observations over time is not usually large enough for estimation of time series parameters to include in regression models (50 or more are cited by McCleary & Hay, 1980). Furthermore, linearity is usually assumed to exist between research variables but not often tested.

If time is to be used as a control variable or as a predictor, it could be a serious mistake to assume linearity--at least between time and other variables. This tends to reinforce the need to test for linearity in all bivariate relationships.

Thus, for any research involving cross sectional sampling from school populations, it would seem that the non-uniform effect of school environments over time would be highly relevant.

For planning and program evaluation, these findings would be equally important. For example, school administrators might schedule stress-reduction workshops during a relatively stressful time of the year. Pre-tests and post-tests designed to evaluate the effects of the program might indicate positive change (i.e., reduced stress levels after the program) when, in reality, the change was the result of naturally occuring variation in stress levels over time. Thus, it would seem to be important to understand the varying pattern of stress over the course of the year before scheduling programs and in collecting evaluative data.

In summary, we know stress to be a pervasive element in school environments. We also know stress plays an important intervening role in the effects of educational environments on students and staff. The findings of this study indicate that these effects are not uniform over the course of the school year and that aggregate patterns of stress over time may vary in predictable ways between schools. More should be done to investigate time ordered patterns of stress in educational settings and to

control for this source of variation in planning, evaluation and research or to include stress over time as a predictor variable in research done in schools.

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Table 1

Factor Loadings for varimax rotated principal components of stress indicators in Salinas High, North Salinas High and Alisal High (N=171 days)*

	Salinas High	
Stress Indicator	Factor 1	Factor 2
WSCAF	.94	.08
WSNUR	.84	.08
WSLIB	.42	.10
WSDIS[1]	.88	.11
WSDIS[2]	.70	.01
WSMNT	.67	.07
WSACC	.42	.26
WSCLR[1]	.06	.68
WSCLR[2]	.07	.75
WSCLR[3]	.08	.76
WSSUP	.82	.02
Eigenvalue	4.84	2.03
Variance accounted for	.44	.185
Cumulative variance	.44	.625

(cont.)

North Salinas High

Stress Indicator	Factor 1	Factor 2
WNSCAF[1]	.82	.41
WNSCAF[2]	.90	.40
WNSNUR	.85	.37
WNSMNT	.05	.44
WNSACC	.31	-.10
WNSLIB	.69	.05
WNSSUP	.44	.09
WNSCR	.68	.40
Eigenvalue	4.26	1.06
Variance accounted for	.533	.133
Cumulative variance	.533	.665

(cont.)

Alisal High

Stress Indicator	Factor 1	Factor 2	Factor 3	Factor 4
WACAF[1]	.54	-.54	-.04	-.10
WACAF[2]	.19	.26	.48	-.03
WANUR	.28	.41	-.22	.23
WAACC	.30	.19	-.34	-.09
WAMNT	.10	-.08	.06	.06
WALIB	.38	.27	.10	-.09
WASCR	.40	-.04	.12	.14
WADRP	-.00	-.23	.04	.42
Eigenvalue	1.50	1.28	1.13	1.01
Variance accounted for	.188	.159	.142	.126
Cumulative variance	.188	.347	.489	.615

* All indicators weighted for daily attendance by dividing daily frequencies by (daily enrollments - daily absences).

Table 2

Polynomial trend analysis of stress over time (Y = Stress, X = Time in days, N = 171 days)

Y	X	R^2	IR^2	BETA (X)	BETA ($X + X^2$)	BETA ($X + X^2 + X^3$)
S-1	X	.027*		-.164*	1.041**	-1.908**
(1°, 2°, 3°)	X^2	.123**	.096**		-1.244**	6.347**
	X^3	.233**	.101**			-4.801**
S-2	X	.049**		-.221**	1.122**	-2.535**
(1°, 2°, 3°)	X^2	.168**	.119**		-1.387**	-5.024**
	X^3	.191**	.023**			2.300**
NS-1	X	.014		-.1177	1.645**	.168
(3°)	X^2	.218**	.205**		-1.819**	1.978
	X^3	.243**	.025**			-2.402**
NS-2	X	.071**		-.266**	.809**	-.908
(2°, 3°)	X^2	.147**	.076**		-1.111**	3.311*
	X^3	.182**	.034**			-2.797**
A-1	X	.174**		.417**	-.973**	-2.728**
(1°, 2°, 3°)	X^2	.301**	.127**		1.436**	5.951**
	X^3	.337**	.036**			-2.856**

Table 2 (cont.)

Y	X	R^2	IR^2	BETA (x)	BETA ($X + X^2$)	BETA ($X + X^2 + X^3$)
A-2	X	.037**		-.193**	-.19412	-1.274
(1°)	X^2	.037*	.00		.0011	2.782
	X^3	.050*	.01			-1.758
A-3	X	.003		-.059	.1807	1.378
(3°)	X^2	.007	.004		-.2476	-3.33*
	X^3	.023	.017*			1.94*
A-4	X	.004		.065	1.395**	.3608
(2°)	X^2	.121**	.117**		-1.373**	1.289
	X^3	.133**	.012			-1.684

* = p of F ≤ .05

** = p of F ≤ .01

Figure 1. An adaptive model of stress as an intervening variable in the effects of educational institutions on students (adopted from Moos, 1979).

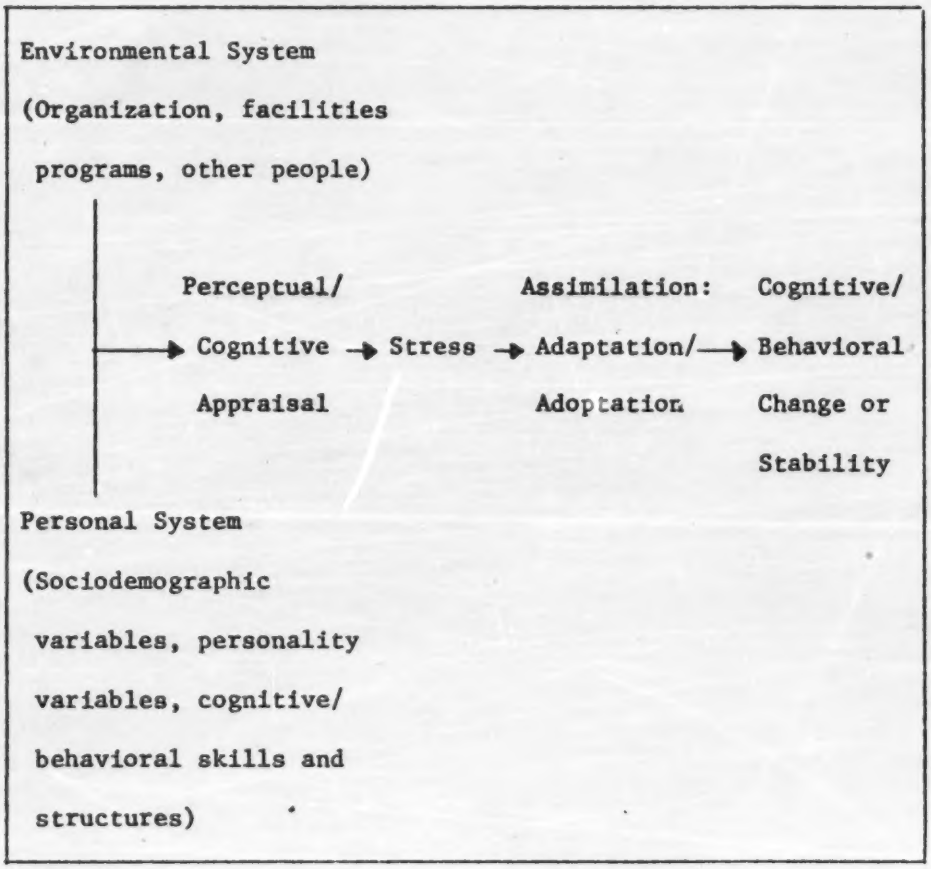

Figure 2.

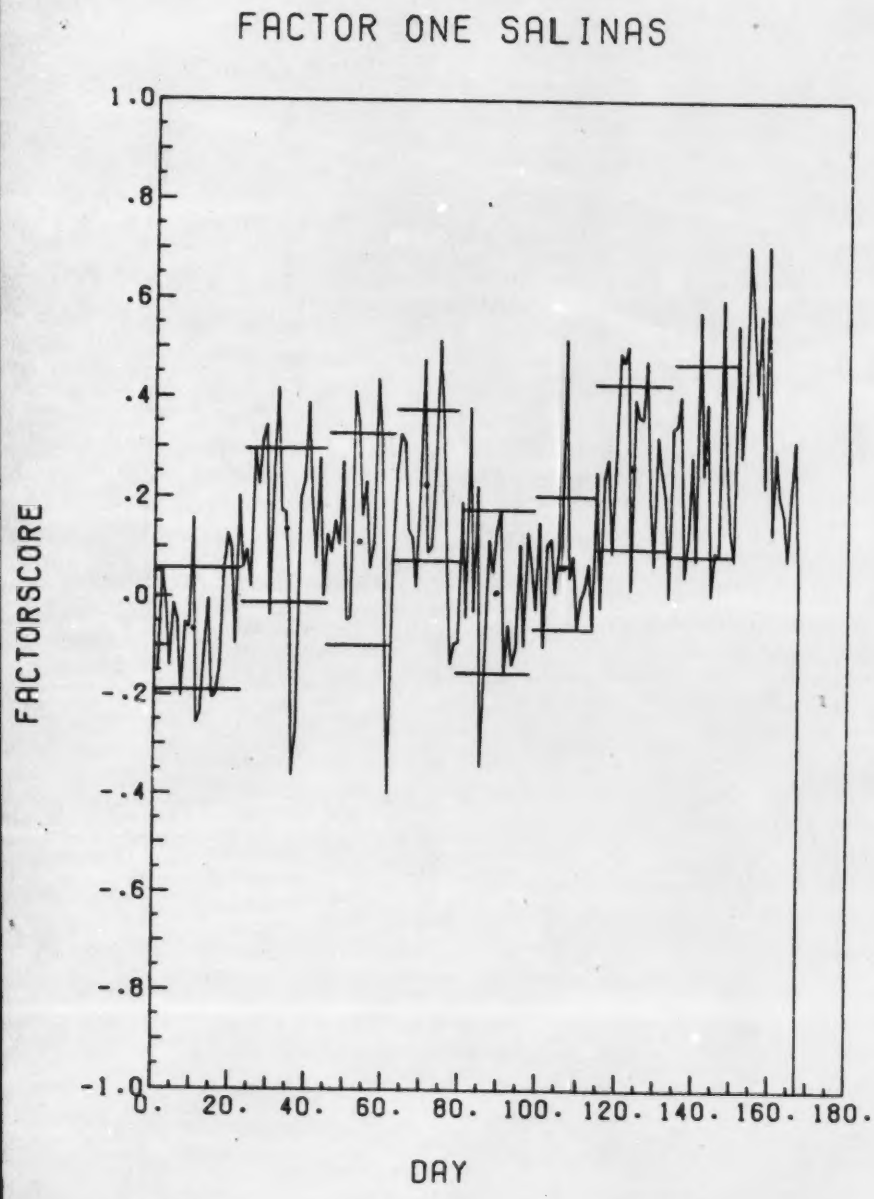

Figure 3.

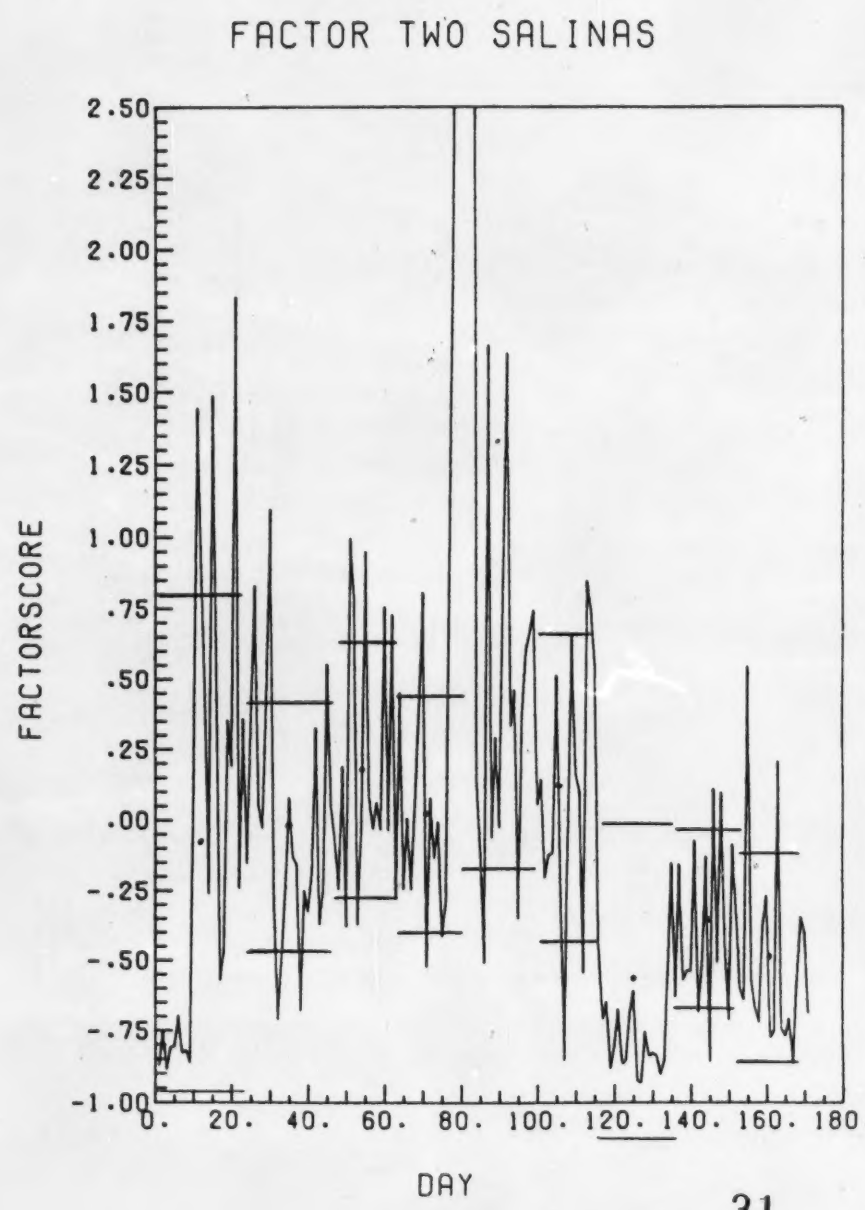

Figure 4.

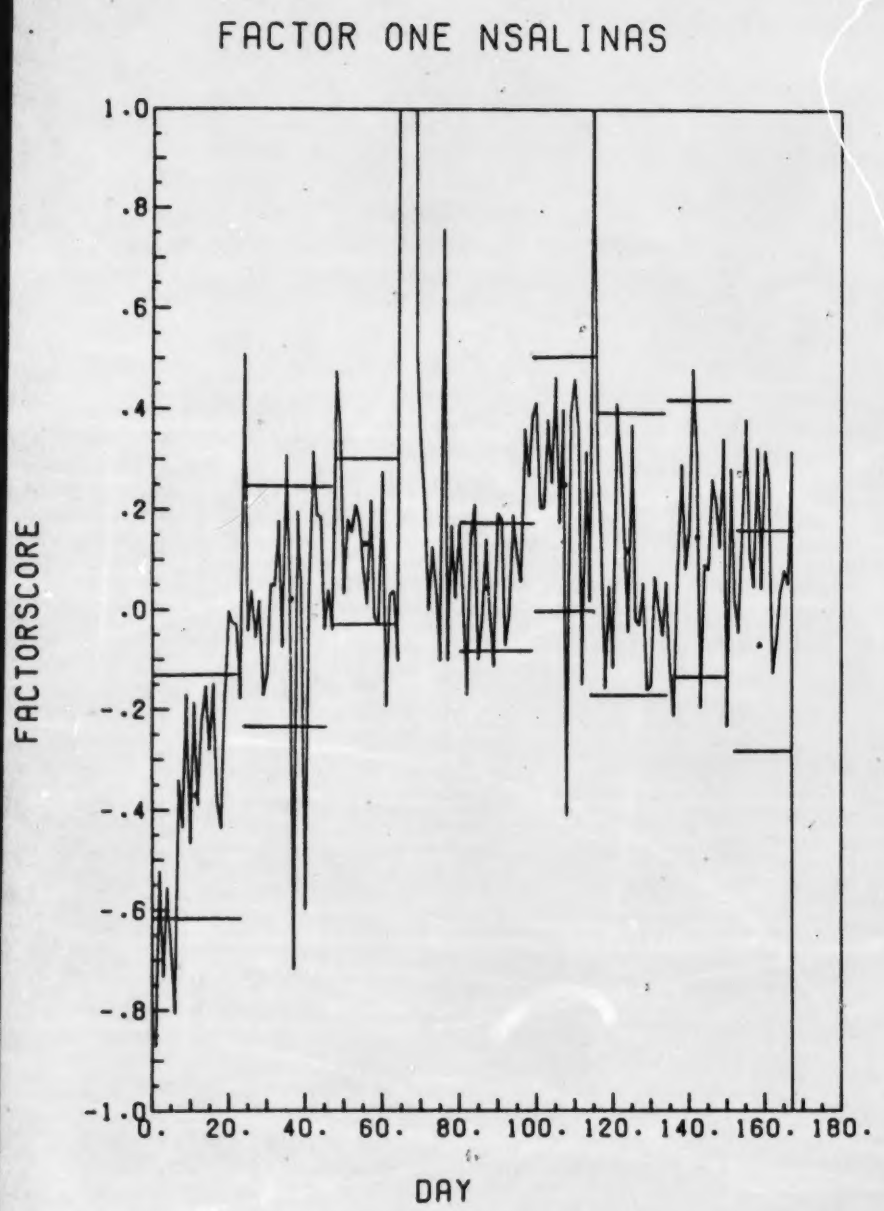

Figure 5.

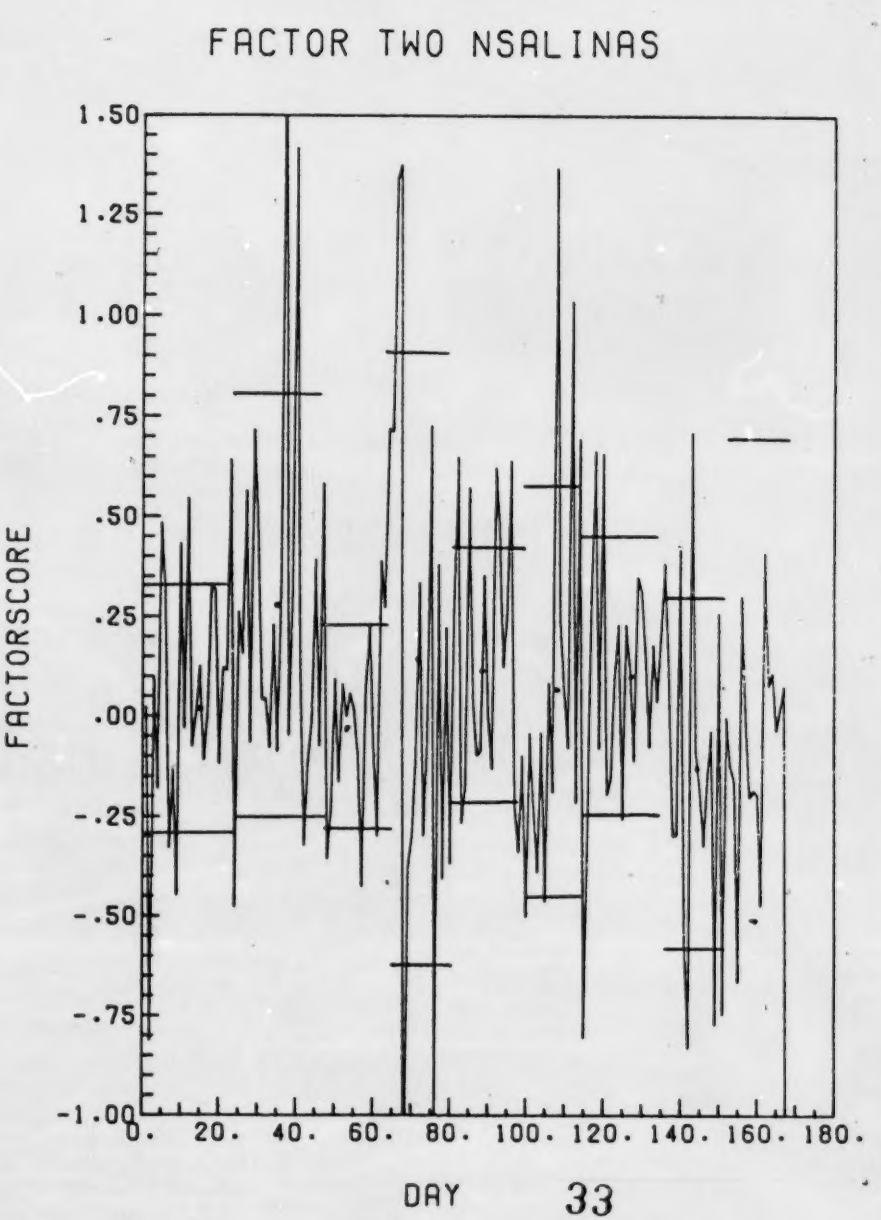

Figure 6.

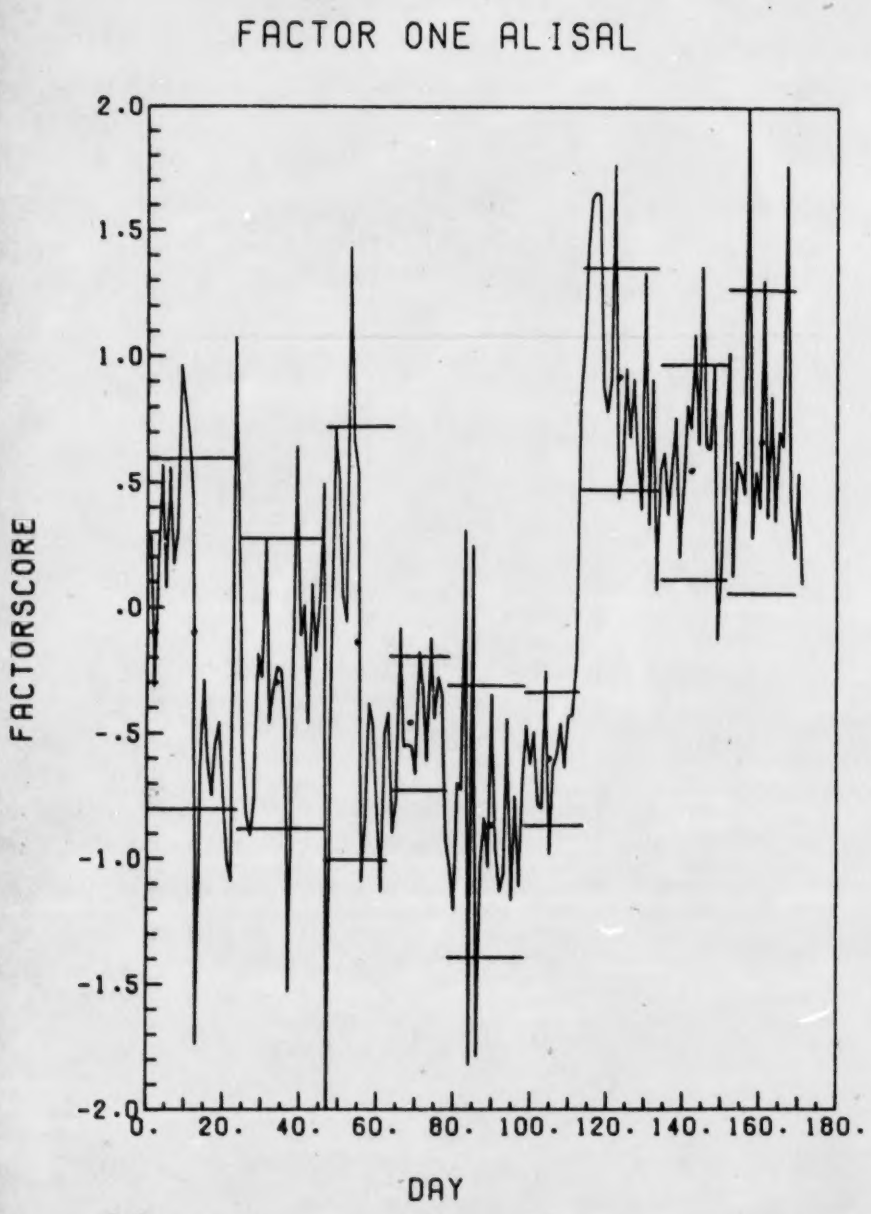

Figure 7.

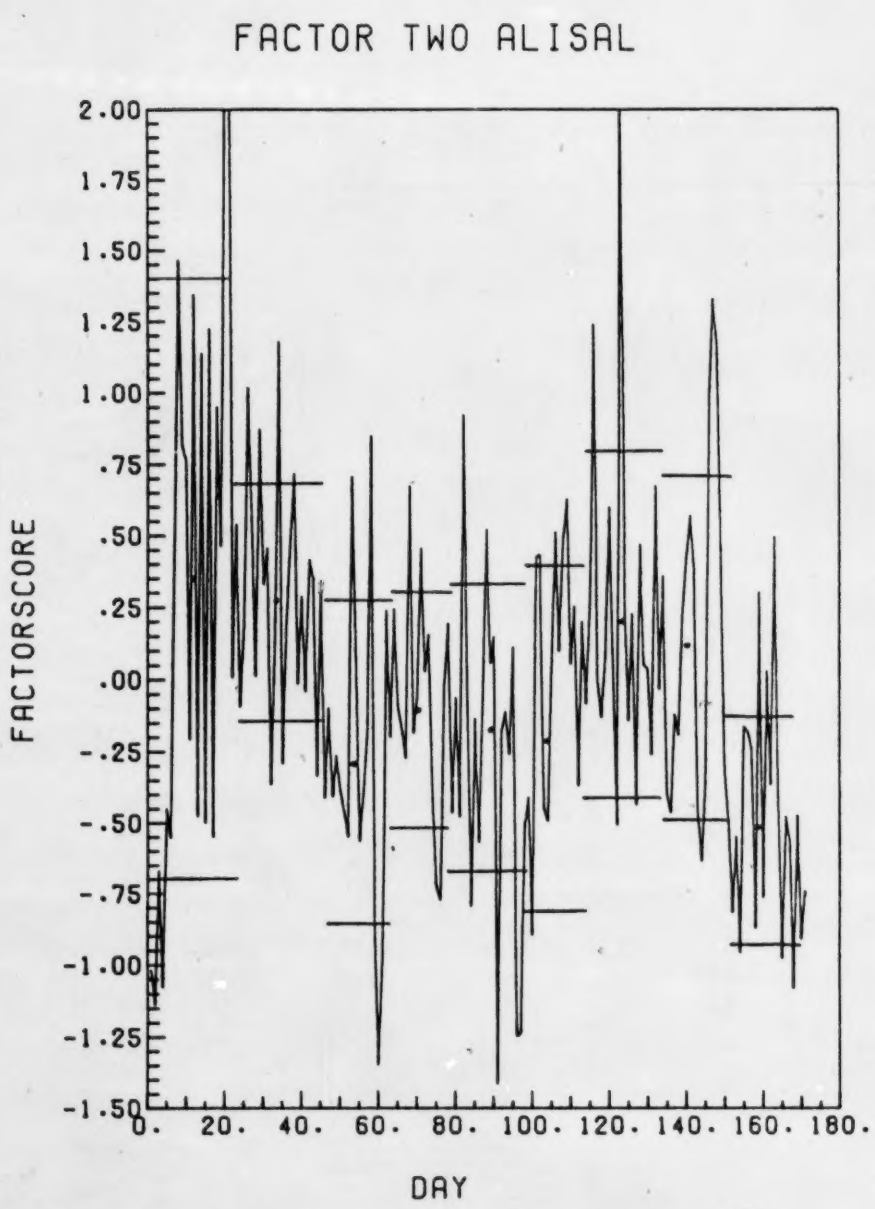

Figure 8.

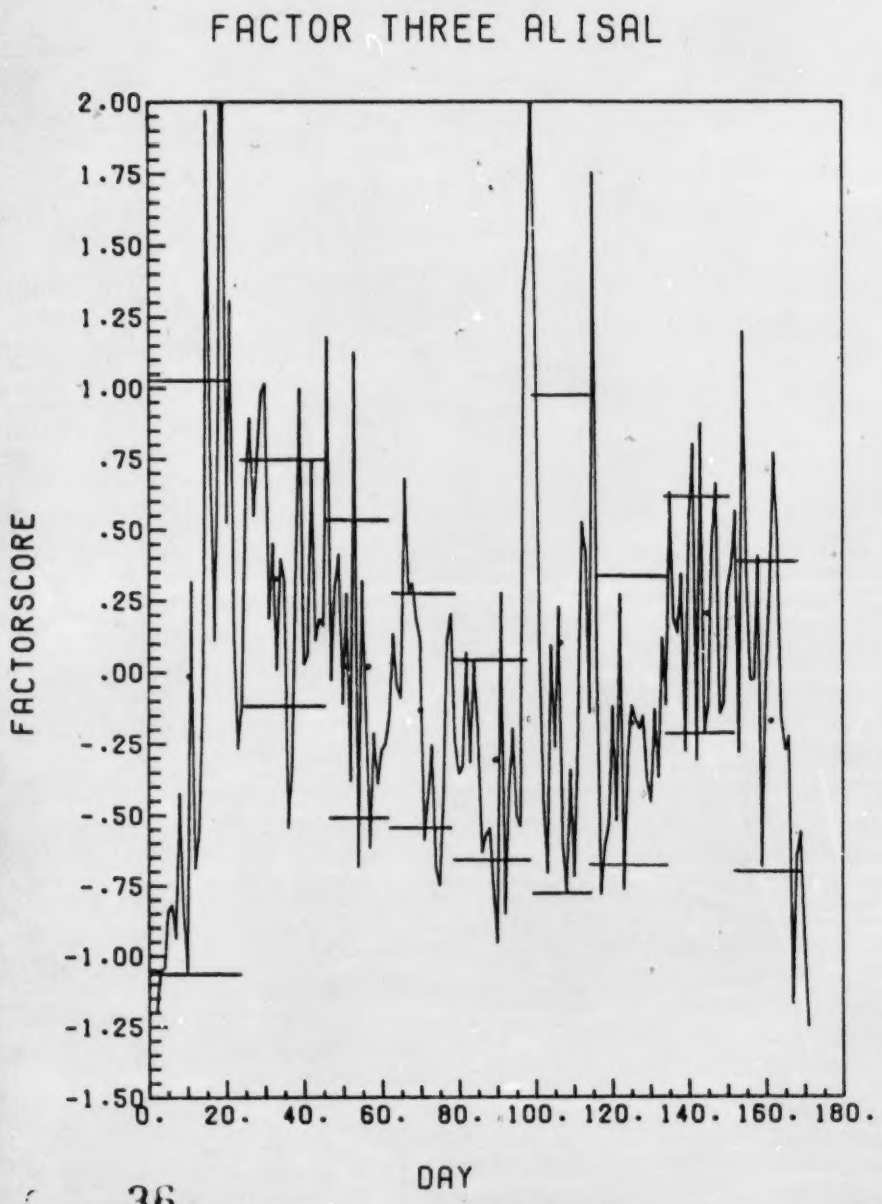

Figure 9.